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10/525,204

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EXAMINER

SYKES, ALTREV C

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/525,204	<b>Applicant(s)</b> TAKEYAMA ET AL.	
	<b>Examiner</b> ALTREV C. SYKES	<b>Art Unit</b> 4145	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) 12-16 and 28-31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 17-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. ____.                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>20050222, 20050421</u> .                                      | 6) <input type="checkbox"/> Other: ____.                          |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1-11 and 17-27, drawn to a leather-like sheet product comprising a substrate which contains two substrate layers.

Group II, claim(s) 12-13, drawn to a process for producing a leather-like sheet product by applying elastic polymer to one side of a sheet.

Group III, claim(s) 14-16, drawn to process for producing a leather-like sheet product by applying elastic polymer to both sides of a sheet and slicing the sheet into two at the non-impregnated layer.

Group IV, claim(s) 28-31, drawn to a process for producing a leather-like sheet product by impregnating a sheet composed of fine fiber and surrounding the sea-island type fiber in the surface layer without a space therebetween on the surface of the sheet material.

2. The inventions listed as Groups I-IV do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

- the special technical feature of Group I is: the substrate comprising (1) a first substrate layer having a structure that it is composed of an elastic polymer and a bundle of fine fibers and the elastic polymer surrounds the fiber bundle and is not existent in the inside space of the fiber bundle and (2) a second substrate layer (A) or (B) having a structure that it is composed of a bundle of fine fibers, and (3) the structure of the first substrate layer and the structure of the second substrate layer (A) or (B) change continuously in the direction of thickness, and said feature is missing from Groups II-IV;
  - the special technical feature of Group II is a step of applying solution of an elastic polymer to one side of a sheet substantially composed of a fine fiber, and said feature is missing from Groups I and III-IV;
  - the special technical feature of Group III is a step of applying solution of an elastic polymer to both sides of a sheet substantially composed of a fine fiber and slicing the sheet into two at the non-impregnated layer, and said feature is missing from Groups I-II and IV;
  - the special technical feature of Group IV is a step of forming a surface layer composed of an elastic polymer (b) surrounding the sea-island type fiber in the surface layer without a space therebetween on the surface of the sheet material, and said feature is missing from Groups I-III.
3. During a telephone conversation with Joseph Ruch on January 8, 2008 a provisional election was made without traverse to prosecute the invention of

Group 1, claims 1-11 and 17-27. Affirmation of this election must be made by applicant in replying to this Office action. Claims 12-16 and 28-31 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

4. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

5. The examiner has required restriction between product and process claims. Where applicant elects claims directed to the product, and the product claims are subsequently found allowable, withdrawn process claims that depend from or otherwise require all the limitations of the allowable product claim will be considered for rejoinder. All claims directed to a nonelected process invention must require all the limitations of an allowable product claim for that process invention to be rejoined.

In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined claims must meet all criteria for patentability including the requirements of 35 U.S.C. 101, 102, 103 and 112.

Until all claims to the elected product are found allowable, an otherwise proper restriction requirement between product claims and process claims may be maintained. Withdrawn process claims that are not commensurate in scope with an allowable product claim will not be rejoined. See MPEP § 821.04(b).

Additionally, in order to retain the right to rejoinder in accordance with the above policy, applicant is advised that the process claims should be amended during prosecution to require the limitations of the product claims. **Failure to do so may result in a loss of the right to rejoinder.** Further, note that the prohibition against double patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

### ***Specification***

6. The abstract of the disclosure is objected to because it exceeds 15 lines and is not a single paragraph.

Correction is required. See MPEP § 608.01(b).

### ***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1-11 are rejected under 35 U.S.C. 102(e) as being anticipated by Yoneda et al. (2003/0022575).

Regarding claim 1, Yoneda discloses:

- A leather-like sheet product comprising a substrate which contains a bundle of fine fibers, (See entangled nonwoven fabric [0010])
- wherein the substrate comprises (1) a first substrate layer having a structure that it is composed of an elastic polymer and a bundle of fine fibers (See [0010])
- and (2) a second substrate layer (A) having a structure that it is essentially composed of a bundle of fine fibers, (See ultra fine fibers of side (b) [0010])

Regarding the limitation that the elastic polymer surrounds the fiber bundle and is not existent in the inside space of the fiber bundle, the examiner notes that Yoneda et al. discloses that the ultrafine fibers so referred to are fibers obtained by modifying the shape of multi-component fibers consisting of at least two spinnable polymer species differing in some chemical or physical properties by removing at least one polymer species by extraction at an appropriate step before or after impregnation with an elastomer. Typical examples thereof are sea-island type fibers. (See [0012]) Additionally, it is known in the art that if the fibrous substrate is made from sea-island type fibers, after impregnation with the elastic polymer and the solidification thereof, the sea component in the fiber may

be dissolved and removed with an organic solvent, causing the island component to remain in a microfine fiber form. (See [0027]) The thus produced microfine fiber will remain, with spaces in the bundles of the microfine fiber. Therefore, there would be no polymer in the inside of the space of the fiber bundle like that of the instant application from the removal of the sea component.

Regarding the limitation that the structure of the first substrate layer and the second substrate layer (A) change continuously in the direction of thickness, it is noted that applicant's specification does not disclose that any particular application method or process is required to achieve this property. As such, it is assumed that the property is dependent only on the composition of the layers. As the composition of Yoneda et al. has been shown to be identical to that claimed by Applicant and exhibit the same enhanced properties of claim 1, the property of the first substrate layer and the second substrate layer (A) changing continuously in the direction of thickness must be inherently provided thereby. See MPEP 2112. It is noted by the examiner that applicant recites no steps that would be required for the layer to change continuously in the direction of thickness beyond the application of the layers to a substrate. This property is therefore inherent as established by applicant's disclosure.

Regarding the limitations recited in claim 2 which is directed to the second substrate layer (A) essentially composed of an elastic polymer and a bundle of fine fibers, the examiner has shown that Yoneda et al. discloses the identical substrate to that instantly claimed. It is believed the second substrate layer (A)



composition changes are directly related to the application of the second substrate layer to that of the first substrate layer comprising a bundle of fine fibers and an elastic polymer for the production of a leather-like sheet product. As such, it is necessarily inherent that the layered substrate of Yoneda et al. exhibits the same properties as instantly claimed. See MPEP 2112. It is noted by the examiner that applicant recites no steps that would be required for the second substrate layer (A) to comprise an elastic polymer and a bundle of fibers beyond the application of the first and second substrate layers one on top of the other. This property is therefore inherent as established by applicant's disclosure.

Regarding claims 3-11, Yoneda et al. discloses all of the claim limitations as set forth above.

Additionally the reference discloses the leather-like sheet product wherein:

- a solid surface layer, a porous surface layer or a composite surface layer consisting of a solid layer and a porous layer is formed on the surface on the first substrate layer side of the sheet product. (See polyurethane [0010] and polyurethane resins [0024] and [0026])
- the surface layer has a thickness of 1 to 200  $\mu\text{m}$ . (See grain layer [0029]-[0030])
- the surface on the first substrate layer side is a suede-like surface.(See grain layer [0029])

- the total thickness of the first substrate layer and the second substrate layer is 0.2 to 5 mm. (See [0028])
- the fiber bundle accounts for 40 to 80 % of the total space area of all the voids in the elastic polymer surrounding the fiber bundle of the first substrate layer. (See ultrafine fiber component [0014])

Regarding the limitation recited in claim 7 which is directed the elastic polymer surrounding the fiber bundle of the first substrate layer in the section perpendicular to the surface of the leather-like sheet product., the examiner has shown that Yoneda et al. discloses the identical substrate to that instantly claimed. It is noted that the applicant's disclosure recites the structure of this first substrate layer can be judged from an electron microphotograph of the section of the leather-like sheet product when cut in a direction perpendicular to the surface of the sheet product. (See pg 6, lines 5-10) It is believed the direction in which the layer is to be cut in regards to the surface will determine the total space area of all the voids in the elastic polymer surrounding the fiber bundle for the production of the leather-like sheet product. As such, it is necessarily inherent that the layered substrate of Yoneda et al. exhibits the same properties as instantly claimed. See MPEP 2112.

Additionally the reference discloses the leather-like sheet product wherein:

- the weight ratio of the bundle of fine fibers to the elastic polymer in the first substrate layer is 10:90 to 50:50. (See [0028])

- the bundle of fine fibers is an assembly of 10 to 10,000 fine fibers  
(See 20 arbitrary ultrafine fibers [0044] and 50-island sea-island  
type composite [0063])  
  
having an average fineness of 0.0001 to 0.1 dtex. (See [0010] and  
[0014])
- the elastic polymer in the first substrate layer is a polyurethane  
(See [0010])

Regarding the limitation recited in claim 10 which is directed to the elastic polymer in the first substrate layer is polyurethane having a solubility in toluene of 15 wt% or less, the examiner has shown that Yoneda et al. discloses the identical substrate to that instantly claimed. It is believed the solubility of the polyurethane in toluene of 15 wt% or less is directly related to the application of the grain layer to that of the first substrate layer comprising a bundle of fine fibers and an elastic polymer for the production of the leather-like sheet product. As such, it is necessarily inherent that the layered substrate of Yoneda et al. exhibits the same properties as instantly claimed. See MPEP 2112. The applicant discloses in the specification that when nylon is used as the island component and polyethylene is used as the sea component, toluene is preferably used as the solvent for measurement to obtain the weight reduction and area expansion coefficient. (See pg 29, lines 11-33). It is noted by the examiner that Yoneda et al. recites the use of an island component of nylon 6 and the sea component of

polyethylene. (See [0013]) In addition, in the working Example 1 it is noted by the examiner that the applicant recites DMF (dimethylformamide), a good solvent for the impregnated polyurethane resin, was applied to the resin impregnated surface of the obtained leather-like sheet product. (See pg.61, lines 12-27) This property is therefore inherent as established by applicant's disclosure.

Regarding the limitation recited in claim 11 which is directed to the elastic polymer in the first substrate layer is a porous elastic material, the examiner has shown that Yoneda et al. discloses the identical substrate to that instantly claimed. It is believed that because polyurethane, a known porous elastomer, is chosen by applicant's own disclosure as the elastic polymer that the first substrate layer is inherently going to comprise a porous elastic material. As such, it is necessarily inherent that the layered substrate of Yoneda et al. exhibits the same properties as instantly claimed. See MPEP 2112.

9. Claims 17-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Fukushima et al. (4,206,257).

Regarding claim 17, Fukushima discloses:

- A leather-like sheet product (See Col 2, lines 5-12)
- comprising a substrate which contains a bundle of fine fibers, (See Col 2, lines 13-16)
- wherein the substrate comprises (I) a first substrate layer having a structure that it is composed of an elastic polymer and a bundle of fine fibers (See Col 2, lines 13-40)

- and a second substrate layer (B) having a structure that it is composed of an elastic polymer and a bundle of fine fibers, the elastic polymer surrounds the fiber bundle and is not existent in the inside space of the fiber bundle, (Col 3, lines 34-39)
- and the total space area of all the voids in the elastic polymer surrounding the fiber bundle is larger than that of the first substrate layer, (See Col 2, lines 13-40)

Regarding the limitation recited in claim 17 that the total space area of all the voids in the elastic polymer surrounding the fiber bundle is larger than that of the first substrate layer, the examiner notes that Fukushima et al. discloses that that polymer A is an elastomer with a degree of swelling (weight gain) in said solvent or decomposing agent of not less than 30% by weight. (See Col 2, lines 23-30) Fukushima et al. discloses that the polymer B is also an elastomer with a degree of swelling not more than two thirds of that of polymer A. (See Col 2, lines 23-30) Additionally, Fukushima et al. discloses the relationship between polymer A to be contained in the fibrous mat and the fibers is different from the relationship between polymer B and the fibers. (See Col 3, lines 18-21) And it is essential that polymer A and polymer B should be present in the product sheet material each separately or in an unmixed state. (See Col 7, lines 22-25) As such, it is assumed that the property is dependent only on the composition of the layers. Therefore, a layer having a polymer of a smaller swelling degree would

possess a larger total space area from the subsequent voids in the polymer surrounding the fiber bundle. As the composition of Fukushima et al. has been shown to be identical to that claimed by Applicant and exhibit the same enhanced properties of instant claim 17, the property of the total space area of all the voids in the elastic polymer surrounding the fiber bundle is larger than that of the first substrate layer must be inherently provided thereby. See MPEP 2112.

Regarding the limitation that the structure of the first substrate layer and the second substrate layer (A) change continuously in the direction of thickness, it is noted that applicant's specification does not disclose that any particular application method or process is required to achieve this property. As such, it is assumed that the property is dependent only on the composition of the layers. As the composition of Fukushima et al. has been shown to be identical to that claimed by Applicant and exhibit the same enhanced properties of claim 1, the property of the first substrate layer and the second substrate layer (A) changing continuously in the direction of thickness must be inherently provided thereby. See MPEP 2112. It is noted by the examiner that applicant recites no steps that would be required for the layer to change continuously in the direction of thickness beyond the application of the layers to a substrate. This property is therefore inherent as established by applicant's disclosure.

Regarding claims 18-27 Fukushima et al. discloses all of the claim limitations as set forth above.

Additionally the reference discloses the leather-like sheet product wherein:

- a solid surface layer, a porous surface layer or a composite surface layer consisting of a solid layer and a porous layer is formed on the surface on the first substrate layer. (See solidifying said polymer A Col 2, lines 58-61)
- the surface layer has a thickness of 1 to 200  $\mu\text{m}$ . (See napping layer Col 9, lines 38-41 wherein 0.2 mm is 200  $\mu\text{m}$ )
- the surface on the first substrate layer side is a suede-like surface. (See Col 2, lines 13-15)

Regarding the limitation recited in claim 21 which is directed the total thickness of the first substrate layer and the second substrate layer is 0.2 mm to 5 mm, the examiner has shown that Fukushima et al. discloses the identical substrate to that instantly claimed. It is noted that Fukushima et al. discloses that after impregnation with the polymers, the fibrous mat has a nap resulting from the fibers on one side or on both sides. (See Col 2, lines 13-20) In addition, Fukushima discloses that the napping is limited to a very superficial portion, namely to the depth of not more than 0.2 mm, whereby a maximum effect of the invention is produced. Therefore, even if both sides of the fibrous mat were to be napped of not more than 0.2 mm, the total thickness of the first and second substrate layers would still not exceed the range instantly claimed of 0.2 mm to 5 mm. As such, it is necessarily inherent that the layered substrate of Fukushima et al. exhibits the same property as instantly claimed. See MPEP 2112.

Additionally the reference discloses the leather-like sheet product wherein:

- the fiber bundle accounts for 40 to 80 % of the total space area of all the voids in the elastic polymer surrounding the fiber bundle of the first substrate layer. (See Col 2, lines 13-40)
- the fiber bundle accounts for less than 40% of the total space area of all the voids in the elastic polymer surrounding the fiber bundle of the second substrate layer in the section. (See Col 8, lines 53-57))

Regarding the limitations recited in claims 22-23 which is directed the elastic polymer surrounding the fiber bundle of the first substrate layer in the section perpendicular to the surface of the leather-like sheet product., the examiner has shown that Fukushima et al. discloses the identical substrate to that instantly claimed. It is noted that the applicant's disclosure only recites the structure of this first substrate layer can be judged from an electron microphotograph of the section of the leather-like sheet product when cut in a direction perpendicular to the surface of the sheet product. (See pg 6, lines 5-10) It is believed the direction in which the layer is to be cut in regards to the surface will determine the total space area of all the voids in the elastic polymer surrounding the fiber bundle for the production of the leather-like sheet product. As such, it is necessarily inherent that the layered substrate of Fukushima et al. exhibits the same properties as instantly claimed. See MPEP 2112.

Additionally the reference discloses the leather-like sheet product wherein:



- the weight ratio of the bundle of fine fibers to the elastic polymer in the first substrate layer is 10:90 to 50:50. (See Col 9, lines 1-16)
- the bundle of fine fibers is an assembly of 10 to 10,000 fine fibers having an average fineness of 0.0001 to 0.1 dtex. (See Col 5, lines 44-49)
- the elastic polymer in the first substrate layer is a polyurethane (See Col 7, lines 35-68)

Regarding the limitation recited in claim 26 which is directed to the elastic polymer in the first substrate layer is polyurethane having a solubility in toluene of 15 wt% or less, the examiner has shown that Fukushima et al. discloses the identical substrate to that instantly claimed. It is believed the solubility of the polyurethane in toluene of 15 wt% or less is directly related to the application of the grain layer to that of the first substrate layer comprising a bundle of fine fibers and an elastic polymer for the production of the leather-like sheet product. As such, it is necessarily inherent that the layered substrate of Fukushima et al. exhibits the same properties as instantly claimed. See MPEP 2112. The applicant discloses in the specification that when nylon is used as the island component and polyethylene is used as the sea component, toluene is preferably used as the solvent for measurement to obtain the weight reduction and area expansion coefficient. (See pg 29, lines 11-33). It is noted by the examiner that Fukushima et al. recites the use of an island component of nylon 6 and the sea

component of polyethylene. (See Col 4, lines 49-68, and Col 9, lines 50-56) In addition, in the working Example 1 it is noted by the examiner that the applicant recites DMF (dimethylformamide) which is a good solvent for the impregnated polyurethane resin was applied to the resin impregnated surface of the obtained leather-like sheet product. (See pg.61, lines 12-27) This property is therefore inherent as established by applicant's disclosure.

Regarding the limitation recited in claim 27 which is directed to the elastic polymer in the first substrate layer is a porous elastic material, the examiner has shown that Fukushima et al. discloses the identical substrate to that instantly claimed. It is believed that because polyurethane, a known porous elastomer, is chosen by applicant's own disclosure as the elastic polymer that the first substrate layer is inherently going to comprise a porous elastic material. As such, it is necessarily inherent that the layered substrate of Fukushima et al. exhibits the same properties as instantly claimed. See MPEP 2112.

### ***Conclusion***

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALTREV C. SYKES whose telephone number is (571)270-3162. The examiner can normally be reached on Monday-Thursday, 7:30AM-5PM EST, alt Friday. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Basia Ridley can be reached on 571-272-1453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from

Art Unit: 4145

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ACS

1/22/08

/Basia Ridley/

Supervisory Patent Examiner, Art Unit 4145